

Claims

CLM 1
(01/07/2004)

1. (Amended) In a method of coating a steel product using a molten aluminum-zinc alloy bath containing aluminum in an amount between about 25% and 70% by weight, the improvement comprising modifying the composition of the aluminum-zinc alloy by adding an effective amount of one or more of a particulate compound constituent that produces a coated spangle size on a substrate of between about 400 to 500 microns, said grain refining particulate compound selected from the group consisting of boride compounds in an amount between about 0.0008 to 0.0012% by weight, and having one of titanium and aluminum.

CLM 2
(01/07/2004)

6. (Amended) In a coated steel article comprising a steel substrate; and an aluminum-zinc coating containing aluminum in an amount between about 25% and 70% by weight applied thereto thereon, the improvement comprising the aluminum-zinc coating being modified with an effective amount of one or more of a particulate compound constituent selected from the group consisting of boride compounds having one of titanium and aluminum, so that said aluminum-zinc coating has a spangle size of between about 400 to 500 microns.

CLM 3
(01/07/2004)

10. (Amended) In an aluminum-zinc steel product coating composition capable of producing a coated steel substrate with a coating spangle size between about 400 to 500 microns, the improvement comprising an aluminum-zinc alloy coating composition including about 25% up to about 70% Al and an effective amount of one or more of a particulate compound constituent selected from the group consisting of boride compounds in an amount between about 0.0008 - 0.0012% by weight, and having one of titanium and aluminum.

Claims

I Claim:

1. In a method of coating a steel product using a molten aluminum-zinc alloy bath, the improvement comprising modifying the composition of the aluminum-zinc alloy by adding an effective amount of one or more of a particulate compound constituent that produces a coated spangle size on a substrate of between about 400 to 500 microns, said grain refining particulate compound selected from the group consisting of boride compounds in an amount between about 0.0008 to 0.0012% by weight, and having one of titanium and aluminum.
2. The method of claim 1, wherein the particulate compound constitute is one of TiB_2 , AlB_2 , and AlB_{12} .
3. The method of claim 1, wherein a particle size of the particulate compound constituent ranges between about 0.01 microns and about 25 microns.
4. The method of claim 2, wherein a particle size of the particulate compound2 constituent ranges between about 0.01 microns and about 25 microns.
5. The method of claim 1, further comprising the step of making a master alloy bath of aluminum and adding an amount of the particulate compound constituents thereto, and then adding the master alloy bath to an aluminum-zinc coating bath in proportions to attain the effective amount of the particulate compound constituent.
6. In a coated steel article comprising a steel substrate; and an aluminum-zinc coating thereon, the improvement comprising the aluminum-zinc coating being modified with an effective amount of one or more of a particulate compound constituent selected from the group consisting of boride compounds having one of titanium and aluminum, so that said aluminum-zinc coating has a spangle size of between about 400 to 500 microns.
7. The article of claim 8, wherein said aluminum-zinc coating is modified with said boride compounds in an amount between about 0.0008 - 0.0012% by weight.

8. The article of claim 9, wherein the particulate compound constituent is one of TiB_2 , AlB_2 , and AlB_{12} .
9. The article of claim 8, wherein a particle size of the particulate compound constituent in the coating ranges between about 0.01 microns and about 25 microns.

Sub.
CLM 3
(01/07/2004)

~~10. In an aluminum-zinc steel product coating composition capable of producing a coated steel substrate with a coating spangle size between about 400 to 500 microns, the improvement comprising an aluminum-zinc alloy including about an effective amount of one or more of a particulate compound constituent selected from the group consisting of boride compounds in an amount between about 0.0008 - 0.0012% by weight, and having one of titanium and aluminum.~~

11. The composition of claim 14, wherein the particulate compound constituent is one of TiB_2 , AlB_2 , and AlB_{12} .
12. The composition of claim 14, wherein a particle size of the particulate compound constituent in the coating ranges from between about 0.01 microns and about 25 microns.
13. The composition of claim 14, wherein the particulate compound constituent is the boride compound and the amount of the particulate compound constituent in the alloy bath ranges between about 0.0008 - 0.0012% by weight of boron.
14. The method of claim 1, further comprising painting the coated steel product 2 without subjecting the coated steel product to skin passing.
15. The article of claim 9, further comprising a painted surface on the coated steel product.